

GUARDRAILS AND HANDRAILS

A. REQUIREMENTS FOR REQUIRED GUARDRAILS AND HANDRAILS

Section 509 specifies all unenclosed floor and roof openings, open and glazed sides of landings and ramps, balconies or porches which are more than 30 inches above grade or floor below, and roofs used for other than service of the building, shall be protected by a guardrail. Guardrails shall be not less than 42 inches in height. Open guardrail and stair railings shall have intermediate rails or an ornamental pattern such that a sphere 4 inches in diameter cannot pass through. The height of stair railings on open sides may be as specified in Section 1003.3.3.6 in lieu of providing a guardrail. Ramps shall, in addition, have handrails when required by Section 1003.3.4.5 and 1003.3.4.6.

EXCEPTIONS:

1. Guardrails need not be provided on the loading side of loading docks.
2. Guardrails for Group R, Division 3 and Group U, Division 1 Occupancies may be 36 inches in height.
3. Interior guardrails within individual dwelling units or guest rooms of apartments, condos and hotels may be 36 inches in height.
4. The open space between the intermediate rails or ornamental pattern of guardrails in areas of commercial and industrial type occupancies which are not accessible to the public may be increased such that a 12 inch diameter sphere cannot pass through.
5. Guardrails on a balcony immediately in front of the first row of fixed seats and which are not at the end of an aisle may be 26 inches in height.
6. Guardrails need not be provided on the auditorium side of a stage or enclosed platform.
7. Along vehicle service pits not accessible to the public.

Section 1003.3.3.6 requires handrails on each side of stairways except those 44 inches or less in width and those serving individual dwelling units in Group R, Division 1 and 3 Occupancies or a Group R, Division 3 congregate residence. Stairways less than 44 inches in width and stairways in individual dwelling units must have at least one handrail. All stairways 30 inches or less in height which serve only one individual dwelling unit may have handrails on one side only.

Handrails projecting from a wall shall have a space of not less than 1 1/2 inches between the wall and the handrail. Handrails projecting from vertical members of guardrails must be 1 1/2 inches from the vertical members. The handgrip portion of handrails shall be not less than 1 1/4 inches nor more than 2 inches (1 1/2 inches for handicapped applications) in cross-sectional dimension, or the shape shall provide an equivalent gripping surface (see details on page 2). The handgrip portion shall have a smooth surface with no sharp corners.

Section 1003.3.3.2 specifies that handrails may project from each side of a stairway a distance of 3 1/2 inches into the required width. Stringers and other projections such as trim and similar decorative features may project into the required width 1 1/2 inches on each side.

The intent of Section 509.2 and Section 1003.3.3.6 is to require stair railings not less than 34 inches high nor more than 38 inches high on open space glazed sides of stairways and guardrails 42 inches high on open and glazed sides of landings, balconies and porches, subject to the exceptions as stated above.

B. REQUIREMENTS FOR NON-REQUIRED GUARDRAILS

Non-required guardrails are guardrails installed where the adjacent lower level is less than 30 inches below the grade level.

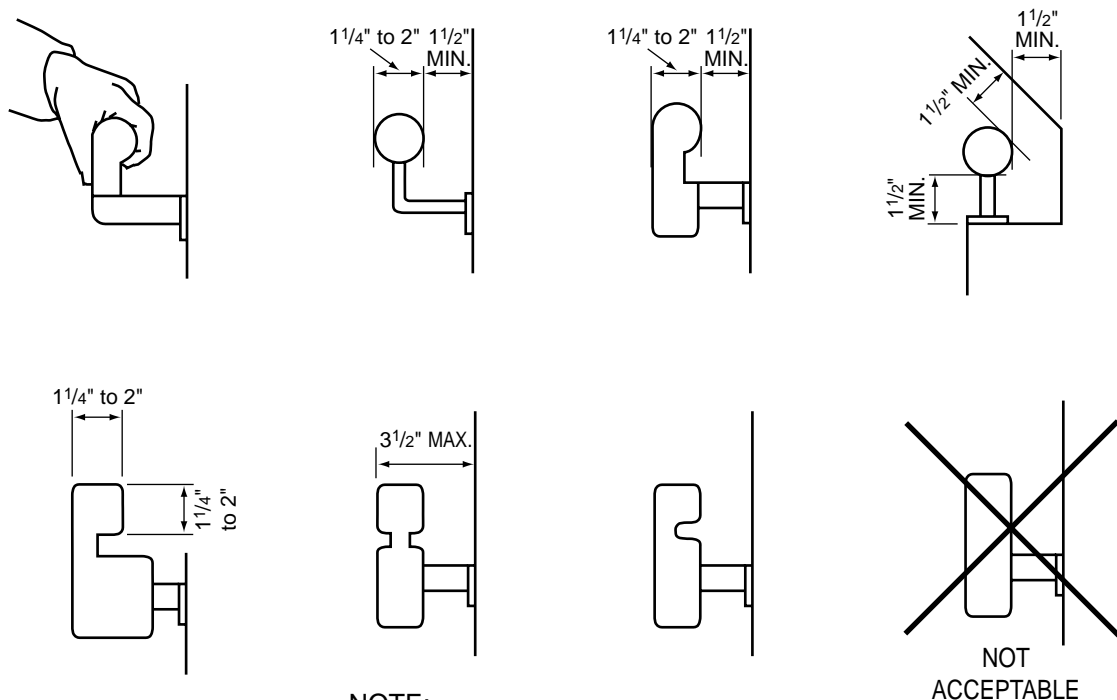
All guardrails are required to withstand a horizontal load of 20 pounds per lineal foot applied at the top of the rail, have no openings greater than 4 inches and be 42 inches in height, subject to the exceptions for Group R, Division 3, Group R, Division 3 Congregate Residence and Group U, Division 1. (Facilities serving an occupant load greater than 50 require guardrails to withstand a horizontal load of 50 pounds per linear foot of rail.)

We have required the above stated design requirements to be fulfilled for non-required guardrails.

This instruction is to confirm that required guardrails must meet the design requirements specified and that non-required guardrails do not have to meet the 4 inch requirement or the 42 inch height requirement, but do have to satisfy the requirement for 20 pounds per lineal foot horizontal loading applied at the top rail.

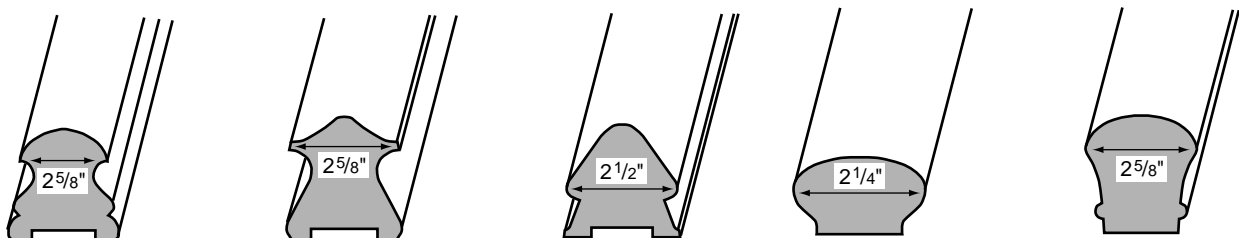
C. REQUIRED EXTENSION OF THE HANDRAIL BEYOND THE TOP AND BOTTOM RISER

Section 1003.3.3.6 provides that, except for private stairways, at least one handrail shall extend in the direction of the stair run not less than 12 inches beyond the top and bottom riser. Ends shall be returned or shall terminate in newel posts or safety terminals.



NOTE:

Other shapes may be acceptable if they provide an equivalent gripping service.



ACCEPTABLE HANDRAIL DESIGNS